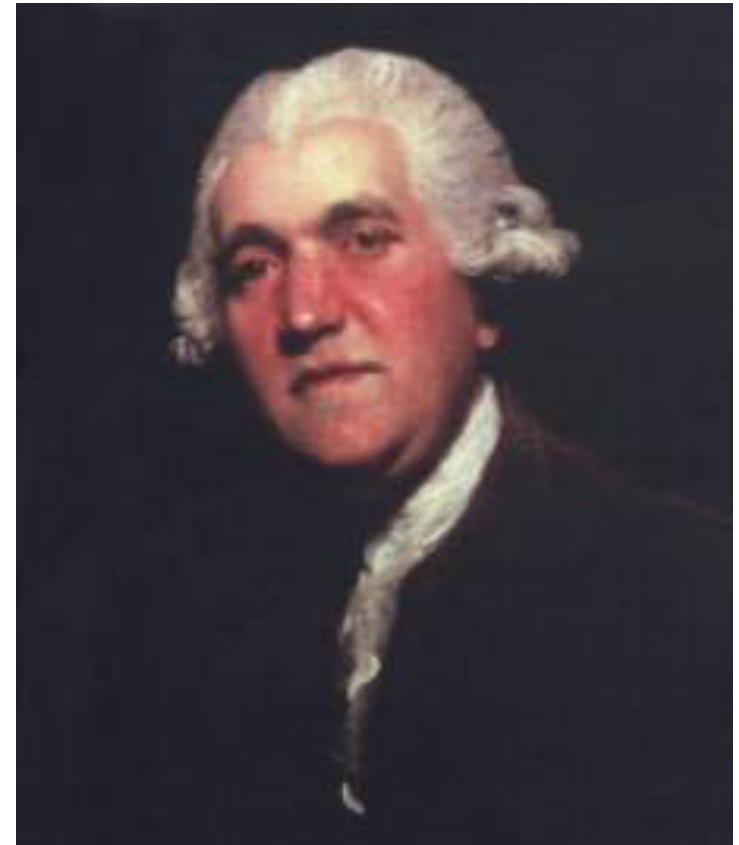


**Charles Darwin**  
**Theory of Evolution and**  
**Natural Selection**

# **Darwin's Grandfathers: His Maternal Grandfather**

- Noted pottery designer
- Founder of the Wedgwood firm (1759)
- Father of Susanna Wedgwood (Charles Darwin's mother)
- Father of Josiah Wedgwood II ("Uncle Jos" )
- Prominent in anti-slavery movement



**Josiah Wedgwood**  
(1730 – 1795)

# **Three Main Parts of Charles Darwin's Life**

**1809 – 1831: Age 0 - 22**

Childhood, education, college

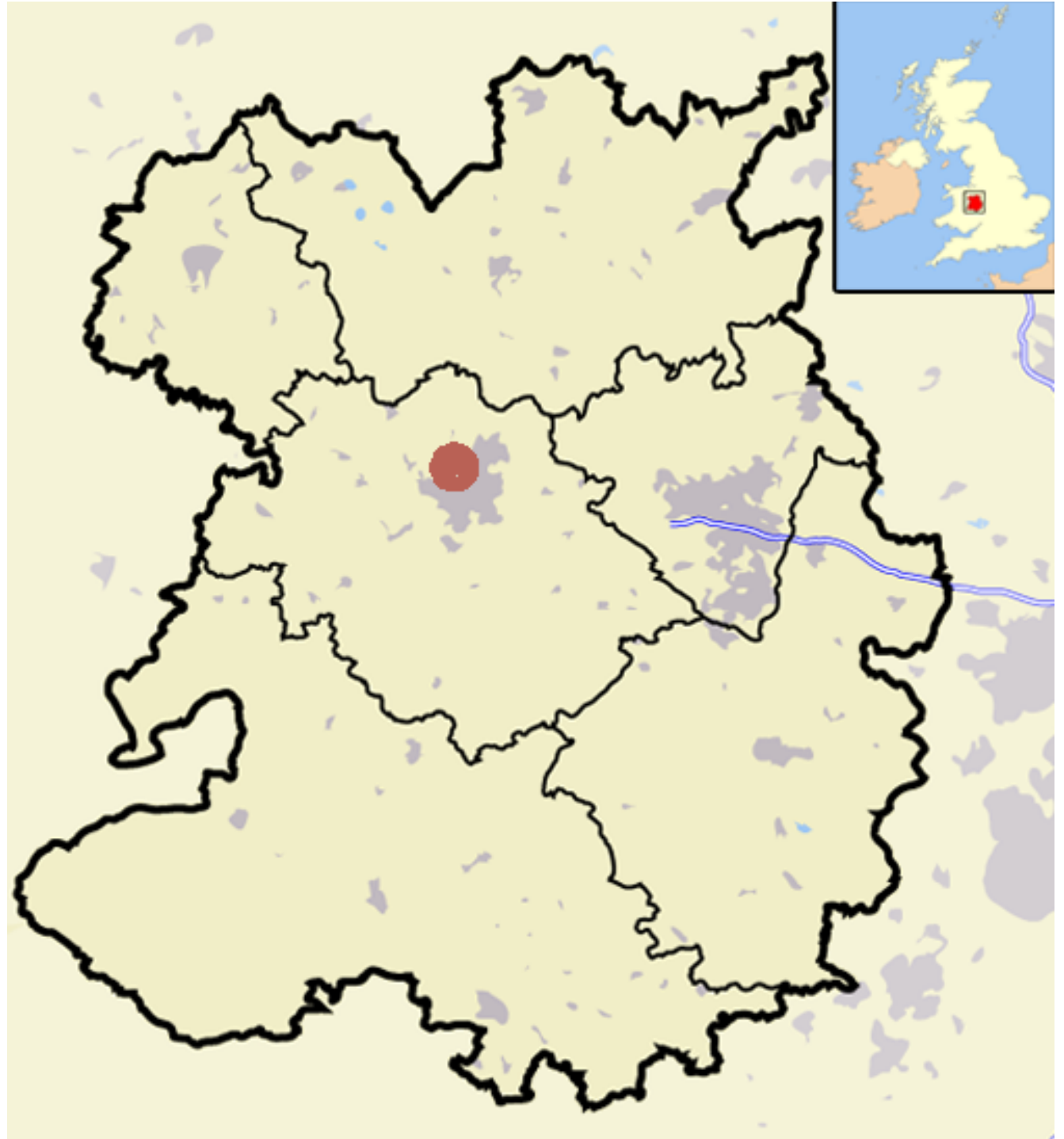
**1831 – 1836: Age 22 to 27**

Voyaging on the HMS *Beagle*

**1836 – 1882: Age 27 to 73**

Scientist and author (geology, experimental and evolutionary biology)

**Darwin was  
born in  
Shrewsbury,  
Shropshire,  
shown on  
these maps.**





**The Mount, Shrewsbury, Shropshire, England  
Charles Darwin's childhood home and his  
birthplace.**

## Darwin's Schooling

1817 – 1818: Attended day-school of Reverend Case

1818 – 1825: Attended Shrewsbury School, a boarding school run by Dr. Samuel Butler (grandfather of the Samuel Butler who wrote *Erewhon* and *The Way of All Flesh*). He could readily walk back home from this school, although he was a boarder.

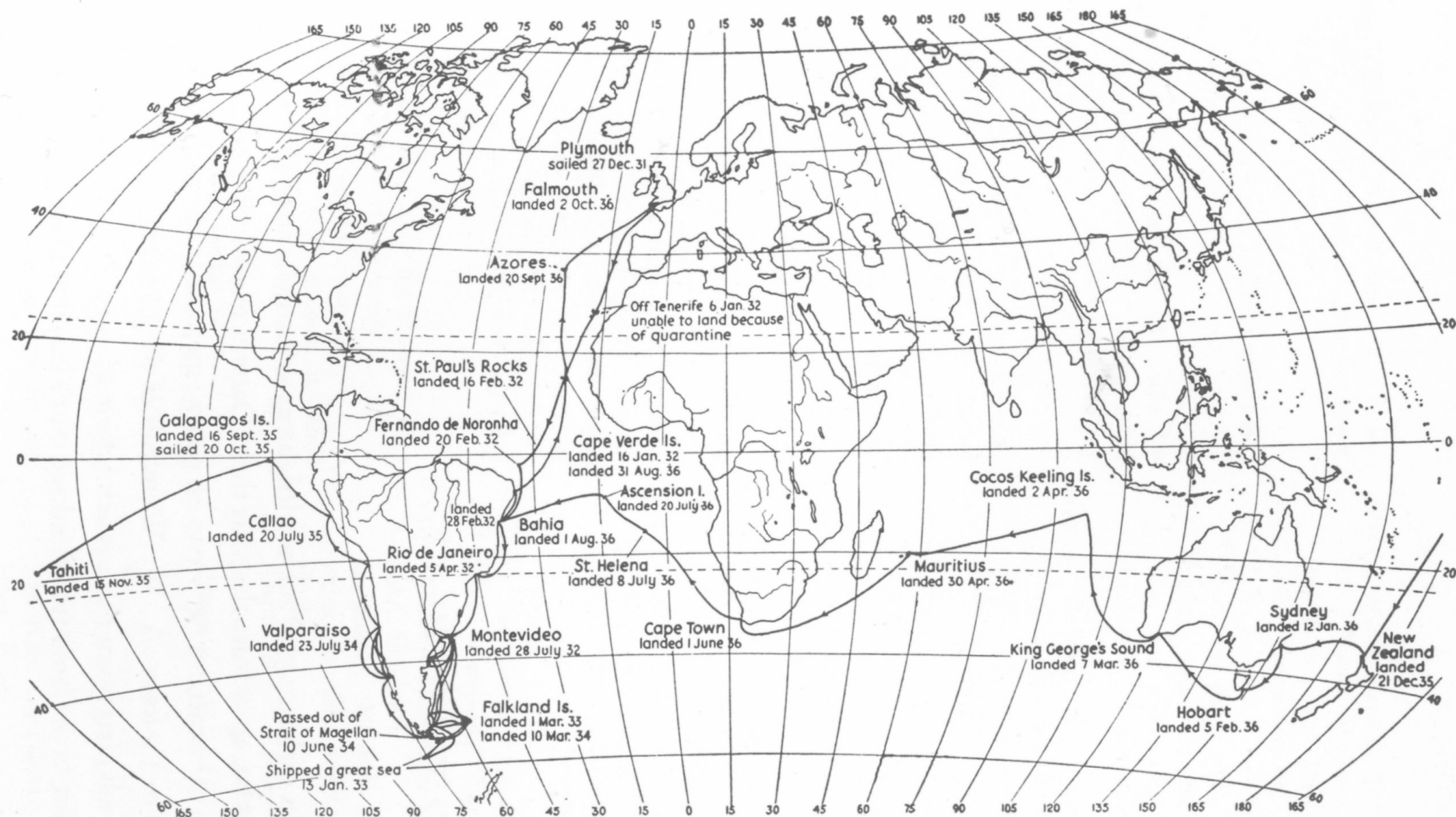
1825 – 1827: Studied medicine (mostly) at University of Edinburgh, where his father and brother had studied, but discovered medicine was not to his liking.

1828 – 1831: Attended and graduated from Cambridge University, intending to become a clergyman.

## **The Voyage of the HMS *Beagle***

In 1831 Darwin serendipitously became the naturalist companion of Captain Robert FitzRoy on the round-the-world voyage of the HMS *Beagle*, a voyage that lasted nearly five years, until late 1836, and included explorations of east and west coasts of South America – including Brazil, Argentina, Tierra del Fuego, Chile, and the Galapagos Islands – plus stops at many other places, including Australia and South Africa.

Darwin collected many specimens and took copious notes on this voyage, publishing a book about his travels to accompany two volumes written by FitzRoy.



## Voyage of the HMS *Beagle*, 1831 – 1836

## 1836 – 1839

Back in London, Darwin became a well-known scientist/naturalist, more of a geologist than a biologist.

However, he began several notebooks on biology and evolution, having become convinced that species were not immutable but changed and evolved.

In 1838 he read Thomas Malthus' essay on population and conceived the importance of natural selection in evolution.

In 1839 he married his first cousin. Emma Wedgwood, and they had 10 children born between 1841 and 1854.

# **Darwin's Theory of Evolution through Natural Selection**

Organisms change in time, usually very slowly (sometimes extremely slowly), or evolve. Darwin wrote of “descent with modification” but the modern term is “evolution.”

All organisms – animals, plants, fungi, all organisms – are descended from a remote common ancestor.

The main (but not only) driving force for evolutionary change is natural selection, the survival of certain traits because they better adapt the organism for its survival. Natural selection doesn't just select against inferior organisms, it selects for superior organisms and leads to even more superior organisms.

## 1839 – 1858

In 1842 and 1844 Darwin wrote out a brief and then a longer sketch of his theory of evolution through natural selection, but did not publish them. He left directions for Emma Darwin to have the 1844 essay published should anything happen to him.

After a considerable amount of work on biological organisms (especially barnacles) Darwin was convinced by Charles Lyell in 1856 to begin writing a major work on evolution, never finished.

This writing was interrupted in 1858 by the arrival of a letter from Alfred Russel Wallace accompanied by a paper on evolution by natural selection – almost identical to Darwin's theory.

## 1858 – 1859

At the suggestion of Hooker and Lyell, presentations were made at the Linnean Society on July 1, 1858, of Wallace's paper simultaneously with two articles by Darwin.

Shortly thereafter, Darwin began work on *On the Origin of Species*, essentially an abridged version of the large book he was working on.

Its publication in late 1859 was a sensation in the scientific world, and biology was never the same. The book had tremendous impact on science, philosophy, and the way humans viewed the world and their place in it. Thomas Henry Huxley, particularly, proselytized for Darwin's ideas, but Darwin had other prominent supporters.

## 1860 – 1882

Darwin continued working and writing the rest of his life (22 more years). Many ideas that were omitted from *On the Origin of Species* (such as the animal ancestry of humans) or only briefly mentioned (such as sexual selection and the expression of the emotions) became the subject of other books.

Darwin received several scientific awards, but was never knighted. When he died in April 1882, however, he was buried in Westminster Abbey in London.

## Darwin's major books

1839 – *Voyage of the Beagle*

1851 – 1854 – *Living and Fossil Cirripedia*

1859 – ***On the Origin of Species***

1862 – *On the Various Contrivances by which British and Foreign Orchids are Fertilised by Insects*

1865 – *On the Movements and Habits of Climbing Plants*

1868 – *The Variation of Animals and Plants under Domestication*

1871 – ***The Descent of Man, and Selection in Relation to Sex***

1872 – ***The Expression of the Emotions in Man and Animals***

1875 – *Insectivorous Plants*

1876 – *The Effects of Cross and Self Fertilisation in the Vegetable Kingdom*

1877 – *The Different Forms of Flowers on Plants of the Same Species*

1880 – *The Power of Movement in Plants* (with son Francis Darwin)

1881 – *The Formation of Vegetable Mould, Through the Action of Worms*

## •**Darwin's Reputation after his death**

- Controversial because people wondered where did moral values fit into this
- His ideas seemed to eliminate purpose and design from the universe for people who believed in a rational order of the world.
- Gradually Darwin's theory of evolution and natural selection began to become accepted by scientists and other intellectuals.
- These ideas would even be applied to society “Social Darwinism”